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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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MINTZ LEVIN COHN FERRIS GLOVSKY & POPEO
666 THIRD AVENUE
NEW YORK, NY 10017

EXAMINER	
LAM, ANN Y	

ART UNIT	PAPER NUMBER
1641	

DATE MAILED: 04/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/967,321	BLACKBURN ET AL.	
	Examiner	Art Unit	
	Ann Y. Lam	1641	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 February 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,13,16-24,26 and 27* is/are pending in the application.

4a) Of the above claim(s) *8-12,14 and 25* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,13,16-24,26 and 27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3/11/02*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

Claims 8-12, 14 and 25 are withdrawn.

Claims 5-7 and 15 are cancelled.

New claim 27 has been added. Claims 1-4, 13, 16-24, 26 and 27 are pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-4, 13, 18-24 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morin et al., 6,610,839, in view of Chin et al, 6,197,599.

Morin et al. discloses the invention substantially as claimed. As to claim 1, Morin discloses a method comprising

(a) inserting a marker DNA sequence in frame immediately preceding a stop codon of each of a plurality of target DNA sequences to form a plurality of modified DNA sequences which encode a plurality of modified amino acid sequence each comprising a marker moiety (col. 156, lines 20-25);

(b) expressing the plurality of modified amino acid sequences from the plurality of modified DNA sequences (col. 156, lines 25-29);

(c) bringing the plurality of modified amino acid sequences into contact with a solid support wherein the marker moiety of the plurality of modified amino acid sequences is able to attach to the solid support (col. 43, lines 27-34), and

(d) washing said solid support to remove unbound proteins (col. 43, lines 30-34).

Morin et al. teaches use of the fusion protein system to isolate specific proteins and peptides (col. 43, lines 27-29.) However, Morin et al. does not teach that the bound proteins are in an array. This limitation is taught by Chin et al.

Chin et al. teaches that proteins immobilized on a solid support can be immobilized in an array, or specific position, so it can be identified by its position and further characterized thereby allowing for study of a wide variety of proteins in a single experiment by a large number of proteins on a support (col. 2, line 60 – col. 3, line 3.) It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the immobilized proteins in the Morin et al. invention in the form of an array as taught by Chin et al. for the advantage of identifying a protein based on its position and studying a wide variety of proteins in a single experiment for convenience.

As to the following claims, Morin et al. discloses the limitations as follows.

As to claim 2, the tag is a peptide sequence (col. 156, line 22).

As to claim 3, the tag allows for purification of the individual proteins in the array (col. 43, lines 27-29).

As to claim 4, the tag is inserted such that the start or stop codon for each of the proteins is replaced (column 156, lines 22-23).

As to claims 13 and 26, the array is used to immobilize specific antibodies (col. 43, lines 34-35).

As to claim 18, the protein array comprises kinases (col. 26, line 26.)

As to claim 19, the plurality of modified amino acid sequences are modified human amino acid sequences (see abstract, "human telomerase reverse transcriptase").

As to claim 20, Morin et al. teaches a FLAG marker moiety (col. 153, line 54.)

As to claims 21-23, the marker moiety is post-translationally modified (col. 49, line 44), such as addition of a lipid (col. 49, line 43), and the modified amino acid sequences are folded into the correct formation (col. 49, line 45.)

2. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morin et al., 6,610,839, in view of Chin et al, 6,197,599, and further in view of Ben-Bassat et al., 4,865,974.

Morin et al. in view of Chin et al. disclose the invention substantially as claimed (see above with respect to claim 1), except for the steps of digesting the target DNA sequence, annealing the marker DNA sequence and ligating the marker DNA sequence as claimed by Applicant. Although Morin et al. teaches that the hTRT stop codon is removed and replaced by vector sequences encoding for the Mye epitope and the His6 reporter tag (col. 156, lines 22-25), Morin et al. does not specifically disclose the steps for removing and replacing the DNA sequences. Ben-Bassat et al. teaches that the

steps of digesting, annealing and ligating are well known in the art for removing and replacing DNA sequences.

Ben-Bassat et al. teaches that construction of suitable vectors containing the desired coding and control sequences employs standard ligation and restriction techniques which are well understood in the art (col 8, lines 3-6.) Bassat et al. teaches restriction enzymes for digestion of DNA sequences (col. 8, lines 9-10), annealing (col. 8, line 53) and ligation steps (col. 8, line 59.) It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the steps of digestions, annealing and ligation as taught by Ben-Bassat et al. for the steps of removing and replacing DNA sequences in the Morin et al. method because Ben-Bassat et al. teaches that these steps are well known in the art for removing and replacing DNA sequences.

3. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morin et al., 6,610,839, in view of Chin et al, 6,197,599, and further in view of Orr et al., 5,741,645, and Nielsen et al., 6,350,853.

Morin et al. in view of Chin et al. disclose the invention substantially as claimed (see above), except for two markers, one immediately following a start codon and one immediately preceding a stop codon. Orr et al. discloses this limitation.

Orr et al. teaches the use of two flanking markers for the advantage of isolating region-specific DNA markers (col. 16, lines 40-44.) Moreover, Nielsen et al. teaches a marker sequence immediately following a start codon (col. 33, lines 23-26.) It would have been obvious to one of ordinary skill in the art at the time the invention was made

to provide two flanking markers as taught by Orr et al. in the Morin et al. method because Orr et al. teaches that it provides the advantage of isolating region-specific DNA markers, and it would have been obvious to one of ordinary skill in the art to provide the second marker immediately following a start codon as taught by Nielsen et al. as a known location for inserting a marker. Also, Applicant has not disclosed a use for inserting a marker immediate to the start codon that is a different use from that shown in the prior art.

4. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Morin et al., 6,610,839, in view of Chin et al, 6,197,599, and further in view of Stanley et al., 5,861,250, and Little et al., 6,387,628.

Morin et al. in view of Chin et al. disclose the invention substantially as claimed (see above with respect to claim 1), except for a disclosure that the marker moiety provides a high-affinity attachment to the solid support.

Stanley et al. however teach that that a molecule may be labeled with histidine for linking to a solid phase (col. 6, lines 41-43). The histidine tag may be captured on a solid support bearing chelatable nickel ions via chelation (col. 6, lines 47-49.) Stanley et al. also teach that subsequent detection methods may be performed (col. 6, lines 49-53). While the molecule in the Stanley et al. disclosure is a nucleic acid, rather than a protein, Little et al. teaches that histidine tags on proteins specifically interact with nickel ions on a column to separate the protein from a reaction mixture (col. 59, lines 56-61.) It would have been obvious to one of ordinary skill in the art at the time the invention

was made to provide a solid support with chelatable nickel ions as taught by Stanley et al. and Little et al. as the solid support in the Morin et al. in view of Chin et al. invention because Stanley et al. and Little et al. teach that a solid support with nickel ions provide the benefit of capturing tags such as histidine tags on molecules such that the molecules will be captured on the solid support. One of ordinary skill in the art would have reasonable expectation of success in utilizing a solid support with chelatable nickel ions to immobilize the histidine tagged protein disclosed by Morin et al. in an array as taught by Chin et al. given the teachings of Stanley et al. that molecules (nucleic acid) with histidine tags can be captured on a solid support with nickel ions for subsequent detection methods, and Little et al. teach that polypeptides with histidine tags will also be captured on a solid support with nickel ions.

Response to Arguments

Applicant's arguments filed February 1, 2006, has been considered but is not persuasive.

Applicant argues on page 8 that Morin et al. do not teach methods for generating a protein array with a plurality of sequences. This is not persuasive because Chin et al. teach this limitation as discussed above.

Applicant also argues on page 8 that Morin's modifications at the stop codon are different than those recited in the current claims—specifically, the invention of Morin et al. removes and replaces the stop codon. This is not persuasive because Applicant's claimed invention also replaces the stop codon (see claim 4.)

Applicant also argues on page 8 that Morin et al.'s method necessarily requires knowledge of the full length sequence being modified since Morin's method requires that the known sequence be inserted into a vector comprising the marker moiety. Applicant argues that Applicant's current claims on the other hand recite a method of generating a protein array where the marker moiety is inserted into the nucleic acid sequence coding for the protein. No knowledge of the sequence being modified is necessary. This argument is not persuasive because the method of Morin et al. does not require full knowledge of the full length sequence (the histidine tag will be inserted into the sequence regardless of whether or not one knows the full length sequence). Also, Applicant's claims do not require that the full length sequence not be known.

Applicant also argues on page 8 that Applicant's current claims recite a method comprising a single step that purifies and immobilizes affinity-tagged proteins. Applicant argues that the inclusion of Chin et al. does not make up for the defect of Morin et al. Applicant argues that even though Chin et al. discloses bound proteins in an array, there is no teaching or suggestion that affinity-tagged proteins are immobilized via the tag as set forth in claim 1. Applicant also argues that Chin et al. in fact teach away from the present invention in that it specifically teaches separate steps of constructing affinity-tagged proteins, expressing them, then purifying them before immobilizing them onto a solid surface. These arguments are not persuasive because claim 1 does not require a single step that purifies and immobilizes affinity-tagged proteins. Nor does claim 1 require that the proteins are immobilized via the tag. Claim 1 only recites that the marker moiety is able to attach to the solid support but does not recite how the

marker moiety is attached. Thus, the marker moiety may be attached by any means such as through a linker. Also, regarding new claim 25, this new limitation reciting that the marker moiety provides a high-affinity attachment to the solid support is addressed in the rejection above with new references, as necessitated by the new limitations.

Applicant also argues on pages 9 through 10 that Ben-Bassat et al. and Orr et al. and Nielsen et al. do not cure the defect of Morin et al. These arguments are not persuasive because the teachings of Morin et al. disclose the claimed limitations as discussed above and are not deficient for the reasons set forth above.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Riggs et al., 6,593,120, disclose a method inserting histidine tag immediately preceding a stop codon, or before a start codon and expressing the protein, and isolating the protein through immobilizing the histidine tag on a column with nickel ions (col. 24, lines 23-24, col. 25, lines 13-19, col. 26, lines 37-47, col. 27, lines 33-36, and col. 5, lines 36-39).

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ann Y. Lam whose telephone number is 571-272-0822. The examiner can normally be reached on M-Sat 11-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on 571-272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A.L.

LONG V. LE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600
04/14/06